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## C-A OPERATIONS PROCEDURES MANUAL

### ATTACHMENT

#### 4.16.n Booster Access Control Test

Text pages 2 though 8

C-A OPM Procedures in which this Attachment is used.

4.16		

#### Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
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Revision No. 00

Approved: \_\_\_\_\_ Signature on File \_\_\_\_\_  
Collider-Accelerator Department Chairman Date

A. McGeary

C-A-OPM-ATT 4.16.n (Y)

Revision 00  
October 28, 1999

**BOOSTER ACCESS CONTROL TEST FOR  
PERIOD \_\_\_\_\_ TO \_\_\_\_\_**

**SECURITY GROUP PERSONNEL**

Print Name	Life Number

All radiation sources RS LOTO  
RS LOTO Tag Number \_\_\_\_\_ applied to \_\_\_\_\_ .

**SUPPORTING DOCUMENTS**

Logic Diagram Title	Logic Diagram Number
Booster Logic Diagram	D40-E100
AGS/Booster Labyrinth Access Logic	D40-E101
AGS Booster Labyrinth Reset Logic	D40-E102

Schematic Title	Schematic Number
Labyrinth Gate A Ladder	D40-E103
Labyrinth Gate B Ladder	D40-E104
Labyrinth Gate A Wiring Diagram	D40-E105
Labyrinth Gate B Wiring Diagram	D40-E106
AGS/Booster Interface 1 of 2	D40-E107
AGS/Booster Interface 2 of 2	D40-E108
Booster Emergency Escape Door Ladder	D40-E109
Booster Plug Door Ladder	D40-E111
Booster Sequential Sweep Wiring 1 of 2	D40-E112
Booster Sequential Sweep Wiring 2 of 2	D40-E113
Booster Crash Buttons Logic/Wiring	D40-E114
Booster Main Magnet, Dump, and Backleg Interlock	D40-E115
Booster Main Magnet Interface	D40-E116
Booster Device Interlock Ladder (1 of 2)	D40-E117
Booster Device Interlock Ladder ( 2 of 2)	D40-E118
Booster Feedforward and Reachback Ladder	D40-E120
Booster Outside Gates and Chipmunks	D40-E121
Booster Power Supply Interface Box	D40-E122
Booster Lighting Controls	D40-E123
Booster Man-Lock Ladder 1 of 3	D40-E125
Booster Man-Lock Ladder 2 of 3	D40-E126

Booster Man-Lock Ladder 3 of 3	D40-E127
Booster MCR Control Panels	D40-E128

### CRASH BUTTON TESTING

CHECK, INITIAL and DATE 1 through 20 for relay dropout when each crash button is operated:

BUTTON	RELAY	INITIAL	DATE
1. 45-1 Man-Lock	AK14, 15		
2. 46-1 A1 Outside	AK14, 15		
3. 46-2 A3 Outside	AK14, 15		
4. 45-16 A1 Inside	AK14, 15		
5. 46-3 Labyrinth Gate A	AK14, 15		
6. 46-4 Labyrinth Gate B	AK14, 15		
7. 45-15 A7	AK14, 15		
8. 45-14 B3	AK14, 15		
9. 45-13 B7	AK14, 15		
10. 45-12 C2 (LTB Headwall)	AK14, 15		
11. 45-11 C4 Inside	AK14, 15		
12. 45-10 C5	AK14, 15		
13. 45-9 C7	AK14, 15		
14. 45-7 D3 Outside	AK14, 15		
15. 45-8 D3 Inside	AK14, 15		
16. 45-6 Escape Hatch	AK14, 15		
17. 45-5 D6	AK14, 15		
18. 45-4 E2	AK14, 15		
19. 45-3 E7	AK14, 15		
20. 45-2 F4	AK14, 15		

GATE TESTING  
CHECK, INITIAL and DATE 1 through 33 for the correct indication:

ITEM	INDICATION	INITIAL	DATE
1. Man-Lock inside gate door sw.	EK4		
2. Man-Lock inside gate crash glass	EK5		
3. Man-Lock inside gate latch sw.	EK11		
4. Man-Lock outside gate door sw.	EK7		
5. Man-Lock outside gate rdnt door sw.	EK12, EK16		
6. Man-Lock outside gate crash glass	EK8		
7. Man-Lock outside gate latch sw.	EK13		
8. Man-Lock outside gate electric strike	operates		
9. Man-Lock outside gate reset	EK14, EK17		
10. Linac/HEBT gate (Linac side)	FK8		
11. AGS/HEBT gate (HEBT side)	FK9		
12. Outside gate reset	FK1		
13. Outside gate redundant door sw.	FK2		
14. Labyrinth gate A crash sw.	lamp		
15. Labyrinth gate A door sw.	lamp		
16. Labyrinth gate A latch sw.	lamp		
17. Labyrinth gate A redundant door sw.	BK8		
18. Labyrinth gate A electric strike	operates		
19. Labyrinth gate A reset	BK3, BK10, BK12		
20. Labyrinth gate B crash sw.	lamp		
21. Labyrinth gate B door sw.	lamp		
22. Labyrinth gate B latch sw.	lamp		
23. Labyrinth gate B redundant door sw.	BK9		
24. Labyrinth gate B electric strike	operates		
25. Labyrinth gate B reset	BK7, BK11		
26. Emergency door - door sw.	lamp		
27. Emergency door redundant door sw.	DK2		
28. Emergency door reset	DK1		
29. Plug door - door sw.	lamp		
30. Plug door redundant door sw.	DK5		
31. Plug door reset	DK7		
32. Plug door fence gate closed	DK8		
33. Sequential sweep gate closed	DK6		

## INPUT TESTING

Check that each condition is indicated by its corresponding relay. Check for the condition both true and false.

CHECK, INITIAL and DATE 1 through 17 for the correct indication of each input CONDITION by observation of the following relays for BOTH input states:

CONDITION	RELAY	RELAY ENER-	RELAY DE-ENERGIZED
1. AGS controlled access	CK1		
2. AGS beam safely off	CK3		
3. All other AGS gates reset	CK8		
4. MCR labyrinth gates sim. release	CK4		
5. AGS sweep complete	CK9		
6. All AGS and PASS Interlocks ok (P)	HK4		
7. All AGS and PASS Interlocks ok (R)	HK5		
8. MCR feed forward sw. 14	HK6		
9. MCR feed forward sw. 15	HK7		
10. LTB beam stop 2 water flow ok	JK12		
11. Chipmunk over F6 septum ok	FK6		
12. Chipmunk over DH2, 3 ok	FK5		
13. Chipmunk at plug door ok	FK10		
14. Chipmunk reset by Optomux	FK3		
15. LTB beam stop 1 Water flow ok	FK14		
16. Reach back from PASS	IK8		
17. Reach back from PASS	IK9		

# OUTPUT TESTING

CHECK, INITIAL and DATE 1 through 33 for the correct CONDITION when the relay is energized/de-energized.

CONDITION	RELAY	INITIAL	DATE
1. LTB DH1 power supply intlk	JK16		
2. LTB DH1 power supply off (status)	JK9		
3. TTB beam stop 1 intlk	JK7		
4. TTB beam stop 1 open (status)	IK1		
5. TTB beam stop 1 closed (status)	IK2		
6. TTB beam stop 2 intlk	JK8		
7. TTB beam stop 2 open (status)	IK3		
8. TTB beam stop 2 closed (status)	IK4		
9. LTB beam stop 1 interlock	JK5		
10. LTB beam stop 1 open	FK12		
11. LTB beam stop 1 closed	FK13		
12. LTB beam stop 2 intlk	JK6		
13. LTB beam stop 2 open (status)	JK10		
14. LTB beam stop 2 closed (status)	JK11		
15. Interlock F6 Extraction Septum PS	4521F24		
16. F6 off	HK3		
17. Intlk BTA DH2, 3 PS	4521F28		
18. DH2, 3 off	HK2		
19. Linac FBI Interrupt	JK10, FK12		
20. Reachback to Linac	IK5		
21. Reachback to 26DH2	IK6		
22. Interlock on main magnet p.s.	JK14		
23. Main magnet p.s. off (status)*	JK15		
24. Booster lights dimmed (status)	IK13		
25. AGS/Booster labyrinth reset	3K76		
26. AGS/Booster labyrinth rdnt sws ok	28AK8		
27. LTB beam stop 1 closed	19DK4		
28. LTB beam stop 2 closed	19DK3		
29. TTB beam stop 1 closed	19DK10		
30. TTB beam stop 2 closed	19DK11		
31. F6 Septum P.S. off	19EK1		
32. DH2, 3 P.S. off	19DK12		
33. DH1, off and Locked out	19EK4		

\* Includes additional PS's off and SW95 opened.

# LOGIC TESTING

CHECK, INITIAL an DATE 1 through 52 by forcing logic contacts ON and OFF and observing correct response of each RELAY coil or TERMINAL.

ITEM	DRAWING	RELAY or TERMINAL	INITIAL	DATE
1	D40-E103	BK1		
2		BK2		
3		BK10, BK3, BK12		
4		BK8		
5		B4		
6		B6		
7	D40-E104	BK5		
8		BK6		
9		BK11, BK7		
10		BK9		
11		B19		
12		B18		
13	D40-E107	CK8		
14		CK9		
15		CK5, HK8		
16		F28		
17		CK6, HK9		
18		F24		
19		HK4		
20		HK5		
21	D40-E108	CK10		
22		C15		
23		C17		
24	D40-E111	DK9		
25	D40-E112	AK1		
26		AK3		
27		AK8		
28	D40-E113	AK13		
29	D40-E116	JK14		
30	D40-E118	IK12		
31		JK5		
32	D40-E118	JK6		
33		JK7		

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34		JK8		
35		HK10		
36		HK11		
37		HK12		
38		HK13		
39	D40-E119	04		
40	D40-E119	JK13		
41	D40-E120	IK5		
42		IK6		
43		IK7		
44		IK14		
45		IK13		
46		FK11		
47		E3		
48	D40-E121	E4		
49	D40-E126	E6		
50		E8		
51		E9		
52	D40-E127	E20		

#### SHORT TEST

To meet the requirements of testing every six months, perform this section. The operating Booster will be shut off for this test. CHECK, INITIAL and DATE ITEMS 1 through 8 for CLOSURE of LTB BS1 and LTB BS2 for each ACTION.

All radiation sources RS LOTO

RS LOTO Tag Number \_\_\_\_\_ applied to \_\_\_\_\_.

ITEM	ACTION	LTB BS1 CLOSURE	LTB BS2 CLOSURE
1	AGS/Booster labyrinth gate B DS		
2	Emergency door DS		
3	Man-Lock gate DS		
4	Plug door DS		
5	AGS/Booster labyrinth gate B RDS		
6	Emergency door RDS		
7	Man-Lock gate RDS		
8	Plug door RDS		